

Typhoid fever

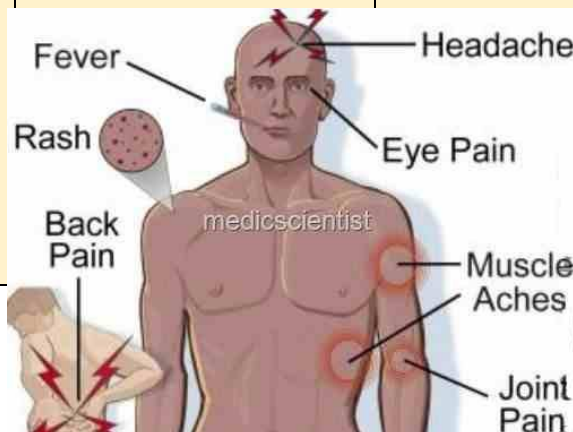
Aetiology

Causative Organism	- Typhoid: salmonella typhi - Paratyphoid: salmonella paratyphi A, B, C
Sources	- Carrier: fecal carrier (intestinal, GB), urinary carrier - Patient
Mode of transmission	"fecal-oral transmission" - Indirect: contamination of water & food - Direct: person to person transmission (rare)
IP	- 1 – 3 weeks

Clinical picture

- Age: it occurs most commonly in **young** age (children & young adults)
- Presentation:
typical untreated attack passes through **4 stages (4 weeks)**:

1st Week	2nd Week	3rd Week	4th Week
General:- toxic -look prostration Fever: rises a step-ladder pattern to reach 39-40°C Headache: severe, persistent, common Abdomen:- - pain -distension - constipation - rarely diarrhea Spleen: palpable by the end of the 1st week Coated tongue Rash: (10 %) crops of red papules over the trunk, disappears in few days Pulse: relative brady. (tachycardia not matching with fever)	- General: become more severe - Fever: becomes High & Continous - Headache: usually disappears - Abdomen: as before - Spleen: more enlargement - Pulse:- tachycardia	Dangerous week Improvement:- - temperature drops - general & abdominal C/P improve BUT Complications may occur	- Convalescence begins BUT - Relapses may occur



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Complications:-

1- Relapses	▪ Re- appearance of manifestations but may be worse
2- GIT	▪ Intestinal hemorrhages : – Mild: may be unnoticed – Severe:- haematochezia (BPR), melena, hypotension, tachycardia, leucocytosis, reticulocytosis ▪ Intestinal perforation :- With subsequent peritonitis
3- Respiratory	▪ Bronchitis ▪ Pneumonia
4- CVS	▪ Toxic myocarditis ▪ Venous thrombosis may occur
5- CNS	▪ Meningitis ▪ Encephalitis : Confusion, Coma, Convulsions "Thyroid state"
6- Urinary	▪ Pyelonephritis ▪ Glomerulonephritis GN ▪ Cystitis ▪ Proteinuria ▪ Oliguria: due to ARF
7- Musculoskeletal	▪ Osteomyelitis ▪ Arthritis
8- Chronic salmonellosis	▪ May be presented with:- FUO - Loss of BW
9- Complications of TTT	▪ E.g. BM failure with the use of chloramphenicol

Clinical variants:-

1. *Mild form:* abortive
2. *Ambulatory form:* the patient does not feel the disease in the 1st week
3. *Afebrile form:* absence of fever
4. *Grave form:* with severe nervous symptoms
5. *Sudoral form:* with excessive sweating, resembling malaria
6. *Localized forms:* pneumotyphoid, pleurotyphoid, meningotyphoid

Investigations

Blood	CBC	WBCs: Leukopenia with relative lymphocytosis Leukocytosis:- in cases of intestinal hemorrhage or perforation RBCs:- Anemia
Culture	▪ Blood culture: positive in the first 2 weeks only (1 st Week) ▪ Stool culture: Positive from the 2 nd week to the 4 th week (3rd Week) ▪ Urine culture:- (25-40%) positive from the 2 nd week to the 4 th week	
Serology	"Widal test":- salmonella agglutination test (2nd Week)	

Widal test

Value:- It measure the titres of Abs that cause agglutination of salmonella antigens

Antigens: H (Flagellar=**specific**), O (Somatic=**common=IgM**), Vi (Capsular)

Interpretation:

- It is positive from the 2nd week
- It is positive when:- the titre > 1/80 or rising titre

Detection of active "recent" infection:

Anti O (recent) & Anti Vi antibodies: Rising titre "4 times" over a week

Detection of the type of infection: Anti H (H-A-B)

False positive widal:

- Previous Somonella infections
- Previous vaccination

Wild test is of particular importance in cases of negative blood culture in which the titre is rising

Differential diagnosis

1. Fever with splenomegaly
2. Fever of unknown origin: **FUO**

Treatment**A- Prophylactic:**

Hygienic measures	▪ Food sanitation ▪ Isolation of patients ▪ TTT of Carriers: Cipro - Chloramphenicol - Cholecystectomy
Immunoprophylaxis	▪ Oral vaccine ▪ TAB vaccine

B- Curative:

General	- Rest in bed - Light nutrient diet - Plenty of fluid
Symptomatic	- For fever & headache:- antipyretics, analgesics - For constipation: enema - For diarrhea:- loperamide
Specific	a) Ciprofloxacin "the drug of choice":-750 mg/12 hrs (10 days) b) Co-trimoxazole : 2 tablets twice daily for 2 weeks c) Chloramphenicol : "is better avoided " (BM suppression) - 50 mg/kg/day orally in 6 hourly doses until fever subsides, Then: - Half the does to complete 2 weeks d) Ampicillin :- 2 gm/6 hours for 2 weeks
TTT of complications	- For intestinal hemorrhage: blood transfusion & anti-shock - For intestinal perforation:- surgical ttt

NB:-Corticosteroid may be given in severe cases: (under cover of antibodies)

Brucellosis

Aetiology

Causative Organism	- Brucella :- gram negative cocco-bacilli
Sources	▪ Brucella melitensis: in goats ▪ Brucella abortus: in cows ▪ Brucella suis: in pigs ▪ Brucella canis: in dogs
Mode of transmission	▪ Drinking raw milk of infected animals ▪ Contamination of skin during dealing with infected animals ▪ Laboratory infection
IP	▪ 1 – 3 weeks

Clinical picture:- *Fever -Toxic -LN- HSM- GIT*

1. Onset: acute or gradulal, with Malaise or Myalgia
2. Fever: "Undulant"
 - It reaches: 30-40°C
 - Waves of Pyrexia lasting for 1 – 3 weeks, followed by apyrexia for 10 days, then relapse occurs & so on
3. Constitutional symptoms:
 - Profuse sweating
 - Headache and fatigue
 - Pain: bony pains, arthralgia, myalgia
4. GIT:- Anorexia, Nausea, Vomiting, Constipation
5. Generalized LN enlargement:- In 50 % of the cases
6. Hepatosplenomegaly

Complications

1. CNS: meningitis encephalitis PN
2. Respiratory: bronchitis bronchopneumonia
3. Musculoskeletal: osteomyelitis arthritis
4. Genital: orchitis, mastitis, abortion

Clinical variants

1. Acute Brucellosis:
 - Undulant: previously described
 - Intermittent:- normal morning temp., high evening temp.+ rigors & sweats
 - Continuous: persistent fever for 1 – 3 months

2. **Chronic Brucellosis:**

- Prolonged course: with minimal fever for several months or years
- Toxic symptoms predominate:- headache, fatigue, myalgias, anorexia
- HSM, LN:- may occur

3. **Localized Brucellosis:** essentially due to Metastatic septicemia:

- Osteomyelitis, Arthritis, Splenic abscesses, Bronchopneumonia, Orchitis

4. **Mild ambulatory type:** in **endemic** areas5. **Malignant type:** marked toxicity with severe complications***Differential diagnosis***

1. Fever with splenomegaly
2. Fever with LN
3. Fever of unknown origin:FUO
4. Relapsing fever

Investigations

Blood	CBC	WBCs: Leukopenia with relative lymphocytosis + Monocytosis RBCs:- Anemia
Culture	▪ Blood culture (50%): positive in the acute phase	
Serology	a) Brucella agglutination test: measures IgM (acute brucellosis): ▪ It is positive from the second week ▪ It is positive when: the titre > 1/160 OR rising titre "4 items" \ week b) Elisa: For both IgM (acute Brucellosis) & IgG (chronic Brucellosis)	

Treatment

General	- Rest in bed - Light nutrient diet - Plenty of fluid
Symptomatic	- For fever & headache:- antipyretics, analgesics - For constipation: enema - For diarrhea:- loperamide
Specific	<u>First regimen:</u> ▪ Doxycycline:- 200 mg/day orally for 6 weeks PLUS: ▪ Rifampicin:- 600 - 900 mg/day orally for 6 weeks <u>Second regimen:</u> ▪ Tetracycline:- 500 mg/6 hours orally for 6 weeks ▪ Streptomycin:- 1 gm/day IM for 2 weeks
TTT of complications	

Malaria

Aetiology

Causative Organism	Protozoa: plasmodium 4 types: plasmodium vivax, ovale, malariae, falciparum
Sources	Patient
Mode of transmission	Bite of female anopheles mosquito
IP	1 – 2 weeks

Clinical picture:

I. Benign tertian malaria (*P. Vivax-Ovale*):

The attack occurs every 48 hours & passes into 3 stages:

Cold Stage	- It lasts for: 1 hour - It is associated with: acute onset of fever to 30-40°C - It is associated with: acute rising of sense of coldness & rigors - It is associated with: nausea, vomiting
Hot Stage	- It lasts for: 8 hours - It is associated with: persistent high fever, sense of hotness - It is associated with: relief from sense of coldness - It is associated with: nausea, vomiting
Sweating Stage	- It lasts for: 2 – 3 hours - It is associated: rapid fall of temperature, excessive sweating - It is associated with: relief from symptoms - It is associated with: vomiting stops

NB: *The spleen:*

- *It is enlarged after 1 – 2 weeks*
- *It is soft, tender, may reach a huge size in chronic cases*

II. Quartan malaria (*P. Malariae*):

- Clinical manifestations are similar to benign tertian malaria, BUT:
- The attacks occur every 72 hours

III. Malignant malaria (*P. Falciparum*):

1. Tertian type: (uncomplicated)
 - Clinical manifestations are similar to benign tertian malaria, BUT
 - Manifestations are more severe
2. **Pernicious** type: (complicated)
 - a) Cerebral malaria:- severe headache, drowsiness, coma, death
 - b) GI malaria:- severe vomiting, diarrhea, dysentery
 - c) Algid malaria:- abdominal pain, shock, hypothermia

3. Black water fever:

- A complication of malignant malaria in patients taking **antimalarial** ttt especially quinine
- Intravascular hemolysis occurs leading to: fever, rigors, jaundice, Hburia, ARF

Tropical splenomegaly syndrome

- It occurs in: areas of endemic falciparum malaria
- There is: massive **splenomegaly**
- There is: marked elevation of serum IgM - IgM deposits in the liver cells
- TTT: splenomegaly responds to antimalarial chemotherapy

Complications:

1. Coma
2. Black water fever
3. ARF
4. Hemolytic anemia

Investigations

1. *Blood film:* to demonstrate the parasite
2. *Bone marrow aspirate*
3. *Blood picture:* features of hemolytic anemia
4. *Therapeutic test:* fever responds to antimalaria

Differential diagnosis

1. Fever with rigors
2. Fever with splenomegaly
3. Fever with jaundice
4. FUO

Treatment

I. Prophylactic:

- Anti-mosquito measures
- Chemoprophylaxis: "Suppressive doses of antimalarial drugs"

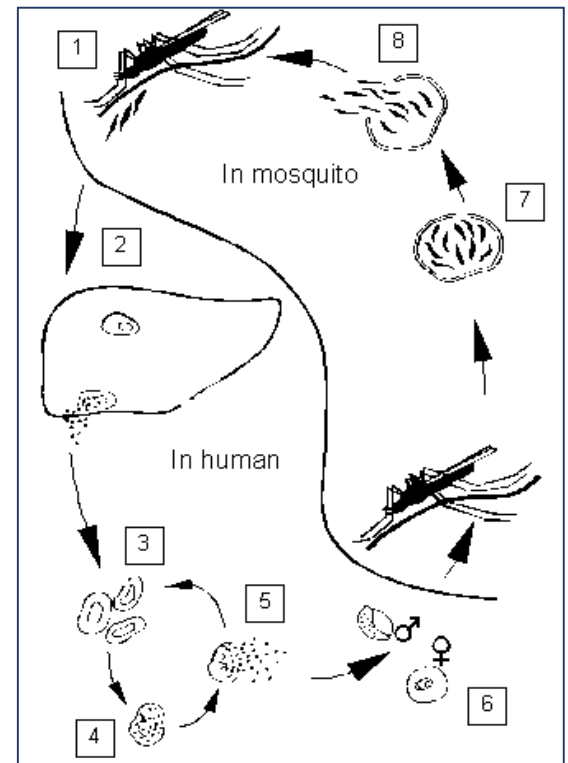
* Chloroquin: 500 mg/week, continued for 4 weeks after leaving the endemic area

* Mefloquine: 250 mg/week in chloroquine-resistant cases

II. Curative:

A- Schizonticidal: "**destroy the erythrocytic cycle**"

B- True causal prophylactics: "**destroy the exo-erythrocytic cycle**"



Schizonticidal		True causal
<u>A- Chloroquine:-(4-2-2)</u> - 4 tablets (tab = 250 mg) - then another 2 tbs after 12 hrs. - then 2 tabs/day for 2 days. <u>SE:</u> retinopathy	▪ Quinine: 650 mg tds (1 week) ▪ Tetracycline:-250 mg/6 hrs (1 week) ▪ Fansider ▪ Mefloquine ▪ Paludrine ▪ Daraprimdal	▪ Used in cases of benign tertian malaria (Vivax-Ovale) to prevent relapses ▪ Primaquine:20mg/day for 2 weeks

III. TTT of complications: "Black water fever"

- Stoppage of quinine, Corticosteroid, Blood transfusion, Dialysis

Treatment of P. falciparum TTT (WHO 2010)

A- Uncomplicated Form (for 7 days)

1- Artemisinin-based combination therapies (ACTs)

Artemether plus one of the following (lumefantrine, amodiaquine, mefloquine or sulfadoxine-pyrimethamine)

2- Second-line:- anti-malaria + antibiotic

- Artesunate plus (antibiotics:- tetracycline or doxycycline or clindamycin).
- Quinine plus (antibiotics as above) = used during **pregnancy**

A- Complicated Form severe falciparum malaria

1- Parenteral antimalarial treatment:-

- IV or IM artesunate or Quinine IV on glucose 5%
- Thereafter, complete treatment by an ACT

2- general and symptomatic ttt

Infectious mononucleosis (IMN)

other names:- Kissing diseases (saliva) - Glandular fever (LNs)

Aetiology:

<u>Causative Organism</u>	EBV
<u>Sources</u>	Patient
<u>Mode of transmission</u>	Droplet infection
<u>IP</u>	1 – 2 weeks

Clinical picture:

1. **Fever:-** with nonspecific rash
2. **Sore throat**
3. **Lymphadenopathy:** cervical LN (main), but generalized LN may occur
4. **Hepatosplenomegaly**
5. **Maculopapular skin rash:-** characteristically produced by administration of Ampicillin

Complications of EBV

Infection	▪ Hepatitis ▪ Meningitis ▪ Encephalitis ▪ Guillain Barre syndrome ▪ Cranial nerve palsies, especially Bell's palsy ▪ Pericarditis, Myocarditis
Malignancy	▪ Nasopharyngeal carcinoma ▪ Non Hodgkin's lymphoma ▪ Burkitt's lymphoma
Blood	▪ AHA ▪ Aplastic anemia

Investigations

1. CBC: lymphocytosis, monocytosis, **atypical cells**, AIHA, Aplastic anemia
2. Serology: antibodies against EBV
3. **Paul-Bunnell test-Monospot test**: antibodies which agglutinate sheep's RBCs
4. Bone marrow examination: to exclude leukemias
5. LN biopsy: to exclude lymphomas
6. Throat swab: to exclude other causes of sore throat

Differential diagnosis

1. Fever with sore throat
2. Fever with LN
3. Fever with splenomegaly
4. FUO

Treatment

1. Antipyretics
2. Antibiotics for secondary infection
3. Corticosteroids for AIHA

Cholera**Aetiology**

Causative Organism	Vibrio cholera: classical & Eltor
Sources	Patient or carrier
Mode of transmission	"Fecal-oral transmission" Indirect: contamination of water & food Direct: person to person transmission (rare)
IP	1 – 5 days

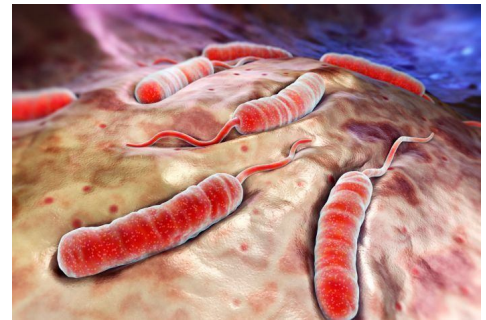
Clinical picture

- The disease usually for 3 – 5 days, **Then**; ends either by recovery or death
- The disease may pass through 3 stages

Stage of evacuation	▪ Acute severe watery diarrhea: effortless, painless (rice-water) ▪ Vomiting: of large volume ▪ Signs of dehydration:- - Dry tongue - Dry skin (inelastic skin) - Sunken eyes - Rapid weak pulse, low BP - Marked loss of weight - Muscle cramps (hyponatremia)
Stage of collapse	▪ Dehydration:- become very marked ▪ Death:- due to hypovolemic shock or due to ARF
Stage of reaction	▪ If there is rapid fluid replacement, rapid improvement will occur ▪ Dehydration: is corrected ▪ Diarrhea & vomiting will stop

Complications

- Hypovolemic shock
- Hypoglycemia
- Hypokalemia
- ARF

**Investigations**

- Stool culture:- on TCBS agar to detect the organism

Differential diagnosis

- Causes of acute watery diarrhea

Treatment**I. Prophylaxis:**

1. Vaccination
2. Tetracyclines: 250 mg/6 hours for 3 days

II. Curative:

1. Fluid replacement
2. **Tetracyclines**:- 250 mg/6 hours
3. for resistant strain:- ciprofloxacin, norfloxacin or co-trimexazole
4. Antidiarrhoeal agents: e.g loperamide

AIDS

Aetiology

Causative Organism	human retrovirus HIV (Human Immunodeficiency Virus)
Sources	HIV positive person (AIDS-Patient or HIV-Carrier)
Mode of transmission	1. Sexual intercourse: especially among homosexuals 2. Vertical:- Mother to child 3. Parenteral:- Contaminated blood - Contaminated needles
IP	Weeks - months - Years

Pathogenesis

- The virus infects the T-helper leading to their progressive depletion
- The result is: Both cellular & Humoral immunodeficiency
- When the T Lymphocytes fall below **200** cells/cmm, the patient becomes at High Risk to develop **opportunistic** diseases

Clinical picture (3 stages)

Acute HIV syndrome	- Fever, rigors, arthralgias, maculopapular rash - (2 weeks) - Resolve spontaneously & pass to clinical latency
Asymptomatic	- Latent period with no symptoms - variable & is about 10 years in average
Symptomatic	- Persistent generalized LN - Constitutional:- Prolonged fever , loss of BW , Chronic diarrhea - Neurological disease:- - HIV encephalitis - Primary CNS lymphoma - Myelopathy, neuropathy, myopathy - Opportunistic infections :- - Pneumocystis carini pneumonia - CMV - HSV - Moccobacterium avium intracellulare - Fungal infection - Opportunistic neoplasm :- - Kaposi sarcoma - Non-Hodjkin's lymphoma - Primary CNS lymphoma

AIDS:- any person with HIV positive if:- (indication of TTT)

- $CD4 < 200$
- Opportunistic Infection or neoplasm

Investigations

1. **HIV antibodies:** by ELISA appear within **2 weeks** of infection
2. **HIV antigen:** appear shortly after infection before the appearance of antibodies

Treatment:-A- Prophylaxis: Prevention???B- Curative:

1. Anti-retroviral TTT: Zidovudine 600 mg/day orally called highly active antiretroviral therapy (**HAART**)
2. TTT of opportunistic infections & malignancies

Fever with rash	
Fever with specific rash	Fever with non-specific rash
• Measles • German measles • Chicken pox • Small pox • Scarlet fever	• Rheumatic fever • SBE • Typhoid fever • IMN • Meningococcal meningitis • Secondary syphilis • Skin diseases • Drug allergy

Fever with rigors	
• Malaria • Acute pyelonephritis • Hemolytic crisis • SBE • Cholecystitis • Abscess (subphrenic, Hepatic, Perinephric)	• Military TB • Amoebic hepatitis • Repeated blood transfusion • Septicemia • Cholangitis (Charcot's fever) • Any high fever of rapid onset

Fever with sore throat		
Local throat diseases	Specific infections	Blood diseases
- Tonsillitis - Pharyngitis - Pharyngeal ulcers: TB - Malignant - Vincent's angina	- Diphtheria - IMN - Scarlet fever	- Leukemias - Aplastic anemia - Agranulocytosis (neutropenia)

Fever of unknown origin (FUO)

Definition:

Fever persisting for > 2 weeks without diagnosis

After proper history taking, physical examination & routine investigations

Aetiology

1. Infections

a) Viral:

- o Infectious mononucleosis
- o Hepatitis

b) Mycoplasmal pneumonia

c) Bacterial

1. *Pyogenic:*

- Cholecystitis	- Cholangitis
- Liver abscess	- Subphrenic abscess
- Pyelonephritis	- Perinephric abscess
- Appendicitis	- Osteomyelitis
- Salpingitis	- Prostatitis
- Sinusitis	- Dental abscess
- Pneumonia	- Lung abscess

2. *Bacteremia*

- o Meningococcal
- o Gonococcal

3. *Infective endocarditis*

4. *Typhoid*

5. *T.B*

6. *Brucellosis*

7. *Leptospirosis*

8. *Relapsing fever*

d) Protozoa:

- o Malaria
- o Toxoplasmosis
- o Amoebiasis (esp. amoebic liver abscess)

e) Fungal

2. Immune:

- o Rheumatic fever
- o Rheumatoid arthritis
- o SLE
- o PAN

3. Neoplastic

Haematologic	Non-haematologic
- Leukaemias - Lymphomas - Gammopathies	- Hypernephroma - Bronchial carcinoma - GIT tumors

4. Granulomatous:

- o Sarcoidosis
- o Crohn's disease

5. Miscellaneous:

- Haemolysis	- Haematoma	- Pulmonary embolism
- drug fever	- thyrotoxicosis	- hypothalamic
- FMF	- Factitious fever	- Cyclic neutropenia

Investigations***I. Laboratory investigations***

- ESR: marked elevation in TB, rheumatic fever, malignancies
- CBC: leukemia, hemolytic anemia
- Blood culture: (infective endocarditis) & Blood film: (malaria)
- Analysis & culture of: urine, stool & CSF
- Organ functions: thyroid, liver & renal functions tests
- Serological tests:

- Widal test	- Brucella agglutination test
- Monospot test or anti-EBNA	- Test of HIV
- ASO	- ANA
- Anti-DNA	- RF

- Protein & immunoglobulin electrophoresis for diagnosis of MM

II. Skin tests: tuberculin test***III. Imaging***

- X-ray: chest, bones & sinuses
- Ultrasonography: heart, abdomen & pelvis
- CT or MRI: brain, chest & abdomen
- Isotopic scanning

IV. Endoscopy (upper & lower GI) & laparoscopy***V. Biopsy:***

- Lymph node, liver & bone marrow biopsy
- Gastric aspirate

VI. Therapeutic tests: Anti-malarial drugs***VII. Laparotomy***

Treatment of parasitic infections

Giardia lamblia

1. Metronidazole (flagyl): 250 mg tds for 5 – 10 days
2. Tinidazole (fasigyn): 2 gm once
3. Atebrine: 0.1 gm tds for 5 days

Ankylostoma duodenale

1. Flubendazole (fluvermal): 200 mg twice daily for 3 days
2. Thiabendazole (Mintezole): 25 mg/kg daily for 2 days
3. Pyrantel pamoate (combantrin): 11 mg/kg once
4. Levimazole (ketrax): 150 mg once
5. Biphenium hydroxyl naphthoat (alcopar): 5 gm once
6. Do not forget TTT of iron deficiency anemia

Entrobilus (oxyuris) vermicularis

a) Antiparasitic ttt:

1. Flubendazole (fluvermal): 100 mg once
2. Thiabendazole (mintezole): 25 mg/kg daily for 2 days
3. Pyrantel pamoate (cobantrin): 11 mg/kg once
4. Levimazole (ketrax): 150 mg/once
5. Pyrivinium pamoate: 5 mg/kg once
6. Piperazine: 300 mg/day for 7 days

NB: a second dose is given after 2 weeks to treat auto-infection

It is better to treat all family members

b) Local measures

1. Mercury ointment: to kill the female
2. Local anaesthetic: to prevent itching

c) Hygienic measures:

1. Cut the nails
2. Boiling of clothes & linens

Filariasis

- Diethyl carbamazine (Hetrazan): 2 mg/kg tds for 3 weeks

Hymenelopsis nana

1. Niclosamide (Yomesan): 2 gm daily for 7 days
2. Praziquantel: 25 mg/kg single dose
3. Atebrine: 100 mg tds for 7 days

NB: TTT should be repeated after 2 weeks

Taenia solium & Taenia saginata

1. Niclosamide (Yomesan): 2 tablets (tab = 0.5 gm) followed after 1 hour by 2 tablets
2. Praziquantel: 10 mg/kg single dose
3. Atebrine:
 - 10 tablets (tab = 100 mg), followed by saline purge after 1/2 hour to expel the worm & the drug
 - The head of the worm should be searched for in the stool
 - Side effects: jaundice, GIT irritation

Hydatid cyst

1. Surgical excision
2. Membendazole: 40 mg/kg/day for 6 – 12 months
3. Albendazole

Fasciola

1. Bithionol: 50 mg/kg every other day for 10 doses
2. Praziquantel: 75 mg/kg in 3 doses, one day

Schistosomiasis

1. Praziquantel: drug of choice for ttt of all types of schistosoma
 Dose: 40 mg/kg orally single doses
 Side effects: headache, dizziness, nausea, vomiting, diarrhea, myalgia, rash
2. Oxamniquine: drug for ttt of S. mansoni only
 Dose: 20 mg/kg orally for 3 doses
3. Metrifonate: drug for ttt S. hematobium onlt
 Dose: 10 mg/kg orally repeated every 2 weeks for 3 times
4. Niridazole: effective against S. hematobium & S. mansoni
 Dose: 25 mg/kg/day orally for 7 days
 Side effects: headache, dizziness, nausea, vomiting, convulsions
5. Antimonials: no more used
 - Tartar emetic, Stipophen

Ascaris lumbricoids

1. Flubendazole (fluvermal): 200 mg twice daily for 3 days
2. Thiabendazole (mintezole): 25 mg/kg daily for 2 days
3. Pyrantel pamoate (combantrin): 11 mg/kg once
4. Levimazole (ketrax): 150 mg once
5. Piperazine: 3 gm once